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| Chemische Fabrik Wülfel | Safety Data Sheet in accordance with Regulation (EC) No 1907/2006 | State: 03/01/2018 Author: A. Splendido |
| | Kjeldahl tablets W08 | Version: 1.1 Page 1 of 10 |

SECTION 1: Identification of the substance/mixture and of the company /undertaking

1.1. Product identifier

1.1.1. Trade name: **Kjeldahl tablets W08**

1.2. Relevant identified uses of the substance or mixture and uses advised against

1.2.1. Relevant identified uses

Use descriptor category:

Life cycle stage (LCS) PW: Widespread use by professional workers

Sector of use SU24: Scientific research and development (analytical chemistry)

Technical function: fine chemical

1.2.2. Uses advised against

not known

1.3. Details of the supplier of the safety data sheet

Chemische Fabrik Wülfel GmbH & Co. KG
Hildesheimer Straße 305, D-30519 Hannover, Germany

phone number: 0049 511 98496-0,

fax number: 0049 511 98406-40

e-mail address of the person responsible for

Safety Data Sheet: cfw@wuelfel.de

Web: www.wuelfel.de

1.4. Emergency telephone number

00 49 511 98496-0 (Office hours:

Monday - Thursday 8 o'clock a.m. to 4 o'clock p.m.)

or

Poison control centre north (Bremen, Hamburg, Lower Saxony,
Schleswig-Holstein)

Tel.: 00 49 551-19 24 0 (24h emergency call)

SECTION 2: Hazards identification

2.1. Classification of the substance or mixture

2.1.1. Classification according to Regulation (EC) No 1272/2008 (CLP Regulation)

Aquatic Chronic 2; H411

2.2. Label elements

2.2.1. Labelling according to Regulation (EC) No 1272/2008 (CLP Regulation)



GHS09

No Signal word

Hazard statements

H411 Toxic to aquatic life with long lasting effects.

Precautionary statements

Prevention:

P273 Avoid release to the environment.

Reaction:

P391 Collect spillage.

Disposal:

P501 Dispose of contents/container to local waste disposal company or to the manufacturer.

| | | |
|------------------------|--|---|
| Chemische Fabrik Wüfel | Safety Data Sheet in accordance with Regulation (EC) No 1907/2006 | State: 03/01/2018 Author: A. Splendido |
| | Kjeldahl tablets W08 | Version: 1.1 Page 2 of 10 |

2.3. Other hazards

The mixture does not meet the criteria for classification as PBT or vPvB substance. See also the sections 5, 6, 10, 11, 12, 15.

SECTION 3: Composition/information on ingredients

3.1. Substances

This product is a mixture.

3.2. Mixtures

A mixture of potassium sulfate and very small amount of copper (II) sulfate pentahydrate.

| Chemical name | CAS No | EC No | REACH Registration No | % w/w | Classification according to Regulation (EC) No 1272/2008 |
|-------------------|-----------|-----------|-----------------------|-------|--|
| potassium sulfate | 7778-80-5 | 231-915-5 | 01-2119489441-34 | 99.60 | not classified as hazardous |

3.2.1. Hazardous ingredients

| Chemical name | CAS No | EC No | REACH Registration No | % w/w | Classification according to Regulation (EC) No 1272/2008 |
|----------------------------------|-----------|-----------|-----------------------|------------------------------------|---|
| copper (II) sulfate pentahydrate | 7758-99-8 | 231-847-6 | 01-2119520566-40 | 0.40 (0.26 copper (II)-sulfate) | Acute Tox.4; H302 Eye Dam. 1; H318 Aquatic Acute 1; H400 Aquatic Chronic 1; H410 M=10 |

3.3. Additional information

The text of H-Statements is given in section 16.

SECTION 4: First aid measures

4.1. Description of first aid measures

4.1.1. General informations

Consult doctor in case of pathological signs.

4.1.2. In case of eye contact

Rinse widely opened eye for several minutes (at least 10 min) under running water. Remove contact lenses. It is advisable to use an eyewash. Further treatment by an ophthalmologist.

4.1.3. In case of skin contact

Remove contaminated clothing immediately and wash affected areas with soap and water.

4.1.4. Following ingestion

Rinse mouth with water and call a doctor! Do not induce vomiting! Encourage to drink water in small sips (dilution effect).

4.1.5. Following inhalation

If inhaling abrasive dust remove victim to fresh air.

4.1.6. Self-protection of the First Aider

Avoid contact with substance still present.

4.2. Most important symptoms and effects, both acute and delayed

Vomiting, irritation of the respiratory tract.

4.3. Indication of any immediate medical attention and special treatment needed

Notify a contact with water-soluble copper compounds.

| | | |
|-------------------------|---|--|
| Chemische Fabrik Wülfel | Safety Data Sheet in accordance with Regulation (EC) No 1907/2006 Kjeldahl tablets W08 | State: 03/01/2018 Author: A. Splendido Version: 1.1 Page: 3 of 10 |
|-------------------------|---|--|

SECTION 5: Firefighting measures

5.1. Extinguishing media

Suitable extinguishing media:

water spray, foam, carbon dioxide or extinguishing powder

Unsuitable extinguishing media:

not known

5.2. Special hazards arising from the substance or mixture

In a fire corrosive sulfur oxides and hazardous vapors of metal oxides can be released.

5.3. Advice for firefighters

Product is non-combustible, fire-extinguishing measures are to be adapted to surrounding.

The extinguishing water should not enter the sewage system!

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

Avoid formation of dust. Do not eat or drink when handling Kjeldahl tablets. Always wear gloves, goggles and protective clothing.

6.2. Environmental precautions

Product should not be discharged into drains or waterways.

6.3. Methods and material for containment and cleaning up

Take up mechanically, fill in corrosion-resistant containers and then dispose of it.

6.4. Reference to other sections

See sections 4, 7, 8 and 13.

SECTION 7: Handling and storage

7.1. Precautions for safe handling

Do not eat or drink when handling Kjeldahl tablets. Use protective gloves, goggles and protective clothing.

7.2. Conditions for safe storage, including any incompatibilities

Kjeldahl tablets should be stored dry in tightly closed containers, separate from foodstuffs, beverages and animal feedstocks.

Storage class: 13 (non-combustible solids) according to TRGS 510 (Storage of hazardous substances in nonstationary containers), Annex 4.

7.3. Specific end use(s)

For determination of nitrogen by the Kjeldahl method.

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

Potassium sulfate

General limit for dust (TRGS 900 (Technical Rules for Hazardous Substances)):

Inhalable fraction (I dust): 10 mg/m³ (TWA)

Respirable fraction (R dust): 1.25 mg/m³ (TWA)

For copper (II) sulfate, limits of 0.1 mg/m³ (measured at the inhalable aerosol fraction) and of 0.01 mg/m³ (measured at the respirable aerosol fraction) the MAK Commission has suggested. The MAK value has no legal binding.

| | | | |
|-----------------------------|--|----------|--------------|
| Chemische Fabrik Wüfel | Safety Data Sheet in accordance with Regulation (EC) No 1907/2006 | State: | 03/01/2018 |
| | | Author: | A. Splendido |
| | | Version: | 1.1 |
| Kjeldahl tablets W08 | | Page | 4 of 10 |

| | | | |
|--|------------------------------|------------------------|------------------------|
| DNEL (systemic) | | | |
| All figures are taken from REACH registration dossiers for potassium sulfate and copper sulfate. | | | |
| Route | Substance | Worker | General population |
| Inhalation (Long time exposure) | potassium sulfate | 37.6 mg/m ³ | 11.1 mg/m ³ |
| | copper in watersoluble dusts | 0.041 mg/kg bw/day | |
| Dermal (Long time exposure) | potassium sulfate | 21.3 mg/kg bw/day | 12.8 mg/kg bw/day |
| | copper in dissolved form | 0.041 mg/kg bw/day | |
| Oral (Long time exposure) | potassium sulfate | - | 12.8 mg/kg bw/day |
| | copper in dissolved form | 0.041 mg/kg bw/day | |

| | | |
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| PNEC | | |
| All figures are taken from REACH registration dossiers for potassium sulfate and copper sulfate. | | |
| Substance | potassium sulfate | copper in dissolved form |
| Freshwater | 0.68 mg/l | 7.8 µg/l |
| Seawater | 0.068 mg/l | 5.2 µg/l |
| Sediment (Freshwater) | not sufficiently accurate data available | 87 mg/kg sediment dw |
| Sediment (Seawater) | not sufficiently accurate data available | 676 mg/kg sediment dw |
| Soil | not sufficiently accurate data available | 65 mg/kg soil dw |

8.2. Exposure controls

Ensure good ventilation. Avoid formation of dust.

8.2.1. Personal protective equipment

8.2.1.1. Eye / Face protection

Safety glasses required.

8.2.1.2. Respiratory protection:

Required when occurrence of dusts (particle filter P2 according to DIN 3181).

8.2.1.3. Skin protection

Chemical protective gloves, e.g. consisting of nitrile rubber (check for damage before use), penetration time (value for permeation: Level 6, > 480 min, EN 374)

8.2.2. General health and safety measures

Avoid unnecessary contact with the product.

Wash hands after work, change contaminated clothing.

While using do not eat, drink or smoke.

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

| | |
|------------------|----------------------------------|
| Appearance: | tablets |
| Physical state: | solid |
| Colour: | white-blue |
| Odour: | odourless |
| Odour threshold: | not applicable |
| Weight: | 5.0 g |
| pH value (20 °C) | 5.9 (at 50 g/l H ₂ O) |
| Melting point: | not determined |
| Freezing point: | not applicable |

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|-----------------------------|--|----------|--------------|
| Chemische Fabrik Wüfel | Safety Data Sheet in accordance with Regulation (EC) No 1907/2006 | State: | 03/01/2018 |
| | | Author: | A. Splendido |
| Kjeldahl tablets W08 | | Version: | 1.1 |
| | | Page | 5 of 10 |

| | |
|--|---------------------------|
| Initial boiling point and boiling range: | not applicable |
| Flash point: | not flammable |
| Flammability: | not flammable |
| Upper/lower flammability or explosive limits: | not applicable |
| Vapour Pressure (20 °C): | <10 ⁻³ mbar |
| Vapour density: | not applicable |
| Density (20 °C): | 2.7 g/cm ³ |
| Bulk Density (20 °C): | 1290 kg/m ³ |
| Water solubility (20 °C): | 120 g/l |
| Partition coefficient: n-octanol/water | not determined |
| Auto-ignition temperature: | not applicable |
| Decomposition temperature: | > 560 °C (Copper sulfate) |
| Viscosity: | not applicable |
| Explosive properties: | not applicable |
| Oxidising properties: | not applicable |
| 9.2. Other information | |
| Other physical and chemical properties have not been determined. | |

SECTION 10: Stability and reactivity

10.1. Reactivity

No specific reactivity.

10.2. Chemical stability

No decomposition when used and stored as intended.

10.3. Possibility of hazardous reactions

Not known

10.4. Conditions to avoid

The contact with moisture.

10.5. Incompatible materials

Alkalis and corrosion sensitive metals.

10.6. Hazardous decomposition products

If the product is overheated or in a fire corrosive sulfur oxides and vapors of metal oxides hazardous to health can be released.

SECTION 11: Toxicological information

11.1. Information on toxicological effects

No toxicological data available for the mixture.

11.1.1. Acute toxicity

All figures are taken from REACH registration dossiers for potassium sulfate and copper sulfate.

Acute oral toxicity

Potassium sulfate: LD₅₀ (rat) 6600 mg/kg bw (RTECS)

Copper (II) sulfate: LD₅₀ (rat) 481 mg/kg bw (OECD Test guideline 401)

Acute dermal toxicity

Potassium sulfate: LD₅₀ (rat) > 2000 mg/kg bw (OECD Test guideline 402)

Copper (II) sulfate: LD₅₀ (rat) > 2000 mg/kg bw (OECD Test guideline 402)

Acute inhalation toxicity

Potassium sulfate: LC₅₀ (rat) > 1200 mg/l/4h

11.1.2. Skin corrosion/irritation

The product can cause skin irritations. But the effect does not meet the criteria for classification.

| | | |
|-------------------------|--|---|
| Chemische Fabrik Wülfel | Safety Data Sheet in accordance with Regulation (EC) No 1907/2006 | State: 03/01/2018 Author: A. Splendido |
| | Kjeldahl tablets W08 | Version: 1.1 Page 6 of 10 |

11.1.3. Eye damage/irritation

The product can cause eye irritation. The effect is not relevant for classification.

11.1.4. Sensitisation to the respiratory tract and the skin

Not known.

11.1.5. Germ cell mutagenicity

Not known.

11.1.6. Carcinogenicity

Not known.

11.1.7. Reproductive toxicity

Not known.

11.1.8. Specific target organ toxicity (single exposure)

Not known.

11.1.9. Specific target organ toxicity (repeated exposure)

Not known.

11.1.10. Aspiration hazard

Not known.

SECTION 12: Ecological information

12.1. Toxicity

12.1.1. Acute aquatic toxicity

All figures are taken from REACH registration dossiers for potassium sulfate and copper sulfate.

Toxicity to fish

Potassium sulfate

LC₅₀ (*Pimephales promelas*, 96 h): 680 mg/l (Test guidelines EPA/600/4-90/027 and EPA/600/6-91/003)

Copper sulfate

LC₅₀ (*Oncorhynchus mykiss*, 96 h): 190 - 210 µg dissolved copper /l

LC₅₀ (*Pimephales promelas*, 96 h): 390 µg dissolved copper /l

Toxicity to daphnia

Potassium sulfate

EC₅₀ (*Daphnia magna*, 48 h): 720 mg/l (Test guidelines EPA/600/4-90/027 and EPA/600/6-91/003)

Copper sulfate

EC₅₀ (*Daphnia magna*, 48 h): 33.8 - 792 µg/l (OECD Test guideline 202, determined in water of different hardness and pH values of 6.1 and 7.35)

Toxicity to algae

Potassium sulfate

EC₅₀ (*Chlorella vulgaris*, 18 d): 2700 mg/l (read-across to Ammonium sulfate)

Copper sulfate

EC_{r50} (*Chlamydomonas reinhardtii*, 96 h): 0.047 mg dissolved copper /l (Growth rate) (OECD Test guideline 201)

12.1.2. Chronic aquatic toxicity

All figures are taken from REACH registration dossiers for potassium sulfate and copper sulfate.

Potassium sulfate

NOEC (*Pseudokirchnerella subcapitata*, 72 h): 100 mg/l

Copper in dissolved form:

NOEC for aquatic invertebrates: 3.12 µg/l

12.2. Persistence and degradability

Copper is not degraded in soil and water sediments, but is enriched by adsorption.

| | | |
|------------------------|--|---|
| Chemische Fabrik Wüfel | Safety Data Sheet in accordance with Regulation (EC) No 1907/2006 | State: 03/01/2018 Author: A. Splendido |
| | Kjeldahl tablets W08 | Version: 1.1 Page 7 of 10 |

12.3. Bioaccumulative potential

Since copper is not biodegradable, it is accumulated in the soil. The bioconcentration factor (BCF) obtained for a variety of plants is in the range of 1 and below.

12.4. Mobility in soil

Potassium sulfate has a high mobility due to its good solubility in water.

Copper (II) sulfate has a high solubility in water, but it is adsorbed by the soil and it is subsequently immobilized.

12.5. Results of PBT and vPvB assessment

Not applicable to inorganic substances.

12.6. Other adverse effects

Not known.

SECTION 13: Disposal considerations

13.1. Waste treatment methods

Product residues and the packaging must be disposed in accordance with the Waste Directive 2008/98/EC and national and regional regulations.

The revised list of waste pursuant to article 7 of the Directive was published with the Commission's Decision 2014/955/EU.

Product

Waste key:

06 03 13 (solid salts and solutions containing heavy metals)

Packaging

Contaminated packaging should be disposed of like the product.

Waste key:

15 01 10 (packaging containing residues of or contaminated with hazardous substances).

SECTION 14: Transport information

14.1. UN number

UN3077

14.2. UN proper shipping name

ADR/RID/ADN:

ENVIRONMENTALLY HAZARDOUS SUBSTANCE; SOLID, N.O.S., (Copper(II) sulfate)

IMDG-Code:

ENVIRONMENTALLY HAZARDOUS SUBSTANCE; SOLID, N.O.S., (Copper(II) sulfate)

ICAO-TI/IATA-DGR:

Environmentally hazardous substance, solid, n.o.s., (Copper(II) sulfate)

14.3. Transport hazard class(es)

9 (Miscellaneous dangerous substances and articles, including environmentally hazardous substances)



Transport in limited quantities in accordance with Chapter 3.4 of the ADR agreement.



| | | |
|------------------------|--|---|
| Chemische Fabrik Wüfel | Safety Data Sheet in accordance with Regulation (EC) No 1907/2006 | State: 03/01/2018 Author: A. Splendido |
| | Kjeldahl tablets W08 | Version: 1.1 Page 8 of 10 |

14.4. Packing group

III (Substances presenting low danger)

14.5. Environmental hazards

Environmentally hazardous substance:

ADR/RID/ADN/IMDG-Code: no

ICAO-TI/IATA-DGR: no

This definition applies for the transport on the basis of section 3.4 of the ADR agreement.

14.6. Special precautions for user

See Sections 6 - 8

14.7. Transport in bulk according to Annex II of MARPOL and the IBC Code

Does not apply, it is a solid product and not a bulk good.

14.8. Additional information

ADR Tunnel restriction code (-)

The passage through all tunnels is allowed.

SECTION 15: Regulatory information

15.1. Safety, health and environmental regulations/legislation specific for the substance or mixture

15.1.1. EU regulations

Safety Data Sheet:

Regulation (EC) No 1907/2006 (REACH), Annex II (SDS) amended by Regulation (EU) 2015/830.

Classification and labelling:

Regulation (EC) No 1272/2008 (CLP (EU-GHS) Regulation)

Seveso III

Directive 2012/18/EU

Kjeldahl tablets W08: E2 Hazardous to the aquatic environment, hazard category Chronic 2

15.1.2. Basic national regulations (Germany)

Act for the protection of young people at work (JARbSchG)

Observe employment restrictions according to § 22 for teens.

Act for the protection of mothers at work, in education and in study (MuSchG)

Inadmissible activities and working conditions according to §§ 11 and 12 MuSchG for expectant and nursing mothers.

Act on protection against hazardous substances (Chemicals Act (ChemG))

Regulation on protection against hazardous substances (Hazardous Substances Regulation (GefStoffV))

Regulation on bans and restrictions on the marketing and delivery of certain substances, mixtures and products pursuant to the Chemicals Act (ChemVerbotsV)

Ordinance on facilities for handling substances that are hazardous to water (AwSV) of 18 April 2017.

Potassium sulfate (identification number: 255, see database Rigoletto): Water hazard class (WGK): 1 (slightly hazardous to water)

Copper sulfate (identification number: 141, see database Rigoletto): Water hazard class (WGK): 3 (highly hazardous to water)

Water hazard class (WGK) of Kjeldahl tablets W08: 2 (obviously hazardous to water)

(Derivation: mass fraction of copper sulfate (M factor: 10) $\geq 0.2\%$ to $< 3\%$, see AwSV, Annex 1, section 5.2.2 Derivation of water hazard class 2)

15.2. Chemical Safety Assessment

For this product a chemical safety assessment was not created.

| | | |
|------------------------|--|---|
| Chemische Fabrik Wüfel | Safety Data Sheet in accordance with Regulation (EC) No 1907/2006 | State: 03/01/2018 Author: A. Splendido |
| | Kjeldahl tablets W08 | Version: 1.1 Page 9 of 10 |

SECTION 16: Other information

16.1. Indication of changes

Subsection 2.2.1. - Update according to CLP Regulation

16.2. Codes of the hazard classes and the hazard categories

a) Hazard classes and hazard categories in subsection 2.1.1.

Aquatic Chronic 2 - Hazardous to the aquatic environment, chronic, category 2

b) Hazard statements according to Regulation (EC) No 1272/2008, the text was not specified in section 3

H400 - Very toxic to aquatic life.

H410 - Very toxic to aquatic life with long lasting effects.

H302 - Harmful if swallowed.

H318 - Causes serious eye damage.

16.3. Literature and sources

Directives and Regulations

REACH Regulation (EC) No 1907/2006 as last amended by Regulation (EU) 2018/35.

CLP (EU-GHS) Regulation (EC) No 1272/2008, as last amended by Regulation (EU) 2017/776.

Directive 2012/18/EU (Seveso III).

Copper compounds

Conclusion on the peer review of copper compounds, EFSA Scientific Report (2008)

REACH registration dossiers

Copper (II) sulfate ((REACH Registration No 01-2119520566-40)

Potassium sulfate (REACH Registration No 01-2119489441-34)

16.4. Methods in accordance with Chapter 2, Article 9 of Regulation (EC) No 1272/2008 for assessing the information that has been used for the purpose of classification

Aquatic toxicity: Use of table 4.1.2 of Part I of Annex 4 of Regulation (EC) No 1272/2008.

16.5. Abbreviations and acronyms

| | |
|-----------------|---|
| ADN | Accord européen relatif au transport international des marchandises dangereuses par voie de navigation intérieure - European Agreement concerning the International Carriage of Dangerous Goods by Inland Waterways |
| ADR | Accord européen relatif au transport international des marchandises Dangereuses par Route - European arrangements about the international transport of dangerous goods on the streets. |
| bw | body weight |
| CAS | Chemical Abstracts Service |
| CLP | Classification, Labelling, Packaging |
| DIN | German Institute for Standardization Incorporated Society - Deutsches Institut für Normung e. V. |
| DNEL | Derived No Effect Level |
| dw | dry weight |
| EC | European Community |
| EC | Effective Concentration |
| EC _r | Effective Concentration (Growth rate) |
| ECHA | European Chemicals Agency |
| EFSA | European Food Safety Authority |
| EN | European Standards |
| EPA | Environmental Protection Agency |
| EU | European Union |
| GHS | Globally Harmonized System of Classification, Labelling and Packaging of Chemicals |

| | | |
|-------------------------|--|---|
| Chemische Fabrik Wülfel | Safety Data Sheet in accordance with Regulation (EC) No 1907/2006 | State: 03/01/2018 Author: A. Splendido |
| | Kjeldahl tablets W08 | Version: 1.1 Page 10 of 10 |

| | |
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| IATA-DGR | International Air Transport Association-Dangerous Goods Regulation |
| IBC-Code | International code for the construction and the equipment of ships for the transport of dangerous goods as bulk goods. |
| IMDG-Code | International Maritime Code for Dangerous Goods |
| LC | Lethal Concentration |
| LD | Lethal Dose |
| MAK | Maximum Workplace Concentration - Maximale Arbeitsplatzkonzentration |
| MARPOL | Maritime Pollution Convention |
| NOEC | No Observed Effect level Concentration |
| OECD | Organisation for Economic Co-operation and Development (Organisation de coopération et de développement économiques, OCDE) |
| PBT | Persistent, Bioaccumulative, Toxic |
| PNEC | Predicted No Effect Concentration |
| REACH | Regulation, Evaluation and Authorization of Chemicals |
| RID | Règlement concernant le transport International ferroviaire de marchandises Dangereuses - Regulation for the international transport of dangerous goods in the rail transport. |
| RTECS | Registry of Toxic Effects of Chemical Substances |
| TRGS | Technical Rules for Hazardous Substances |
| TWA | Time-Weighted Average |
| UN | United Nations |
| vPvB | very persistent and very bioaccumulative |
| 16.6. Further information | |
| This information is based on our present knowledge, they do not constitute an assurance of product properties and establishes no contract legal rights. | |